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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,426	01/27/2004	Jean-Michel Larrieu	BDL-445XX	1527
207 7590 08/17/2007 WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			EXAMINER ABOAGYE, MICHAEL	
			ART UNIT 1725	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/765,426	Applicant(s) LARRIEU ET AL.	
	Examiner Michael Aboagye	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 May 0207.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-15 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-15 and 17-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5-11 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Rodhammer (US Patent No. 6,907,661).

Regarding claims 1-3, Rodhammer teaches a method of manufacturing an active cooling panel (column 1, lines 13-14, line 34-35 and lines 54-56), the method comprising the steps of: Forming a first part of thermostructural composite material obtained by densifying a porous fiber preform with a matrix (note , Rodhammer teaches a composite material made of carbon fiber reinforced carbon (CFC), this material is structurally and by composition similar to the structural material carbon-carbon (C/C) composite cited by the applicant in his specification page, 1, lines 16-22); said first part having an inside face presenting indentations forming channels and forming a second part of thermostructural composite material obtained by densifying a porous fiber perform with a matrix, said second part having an inside face for application on said inside face of the first part; (column 1, lines 49-56, column 2, lines 39-43 and column 7,

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lines 46-67 and figures 1A -!c); forming a metal coating on said inside face of the first part including on said indentations; forming a metal coating on said inside face of the second part

(column 7, lines 25-35); and prior to the forming of the metal coating on the inside face of at least one of the first and second parts, performing a treatment to reduce a surface porosity of the thermostructural composite material of said at least one part on the inside face of said at least one part, said porosity reduction treatment including the introduction of a filling material within surface pores of the thermostructural composite material ( column 7, lines 53-65) ,( Note with the coating penetrating any existing pores will make the inner channel surface leakproof); assembling the first and second parts together by bonding of said inside faces together by hot compression using said metal coatings, thereby obtaining a cooling panel of thermostructural composite material having integrated fluid flow channels, each having a respective inner surface, said hot compression or isostatic pressing carried out at a temperature below the melting temperature of the metal used for bonding said parts ( see, column 5, lines 38-42, Rodhammer teaches , hot isostatic pressing at  $0.3-0.6X T_M$  of the metallic component that adjoins the joining composite material surface).

Regarding claims 5 and 13, Rodhammer teaches interposing a metal foil between said inside faces of the parts provided with metal coatings (column 3, lines 10-27).

Regarding claims 6-10, Rodhammer teaches forming first and second superposed deposits, the first deposit having a function of forming a reaction barrier

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between the components of the thermostructural composite material and the second deposit, and the second deposit contributing to bonding between the parts by hot compression; the first deposit is selected from rhenium, molybdenum, tungsten, niobium, and tantalum (column 6, lines 1-5 and column 7, lines 28-31); bonding enabling metals including copper, nickel or iron and their alloys (column 5, lines 62-67).

Regarding claim 11, Rodhammer teaches applying coating by physical vapor deposition (column 5, lines 51-57).

Regarding claims 14 and 15, Rodhammer teaches foil forming the metal coating, made of a metal selected from niobium, molybdenum, tungsten, tantalum, and rhenium (column 6, lines 1-5, column 7, lines 28-31 and column 8, lines 33-37); in figure 1A is shown a foil (2) and in figure 1B the foil (2) matches the indentation in bottom component.

Regarding claims 20 and 21, Rodhammer teaches, parts to be assembled together which are made of ceramic matrix composite material; wherein the parts to be assembled together are made of ceramic matrix material in which the matrix is constituted at least in part by silicon carbide (abstract, column 1, lines 53-56, column 2, lines 39-43 and column 8, lines 25-52).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rodhammer (US Patent No. 6,907,661) as applied to claim 1 above and in view of O'Donnell et al. (US Patent No. 6,620,520).

Rodhammer does not expressly teach applying the metal coating by plasma sputtering.

O'Donnell et al. teaches providing a metallic coating on a surface of a ceramic composite material by deposition techniques such as plasma sputtering, vapor deposition, chemical deposition or physical deposition (O'Donnell et al., column 8, lines 57-65).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to use plasma sputtering deposition technique in the method of Rodhammer to apply the metal coating as taught by O'Donnell et al., since plasma sputtering is an obvious variant of depositional techniques used to apply metal coatings on a substrate (O'Donnell et al., column 8, lines 57-65).

5. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodhammer (US Patent No. 6,907,661) as applied to claim 1 above and in view of Lundberg (US Patent No. 5,713,522).

Rodhammer does not expressly teach applying a suspension to at least one of said inside faces of the parts, the suspension comprising a ceramic powder and a ceramic material precursor in solution for reducing porosity.

Lundberg teaches manufacturing a structural component from a stack of ceramic fiber composite material comprising; applying on the surface of said stack, a suspension made of a ceramic powder slurry and a ceramic material precursor in solution for reducing porosity; wherein said applying is done by chemical vapor infiltration and further densifying the composite material by hot pressing of hot isostatic pressing or precursor pyrolysis (Lundberg, column 2, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to apply a suspension comprising a ceramic powder slurry and a ceramic material precursor in solution on the surfaces of the two parts in the method of Rodhammer as taught by Lundberg to fill crevices and thereby reduce porosity in the two parts made of composite material (Lundberg, column 2, lines 1-12).

### ***Response to Arguments***

6. The examiner acknowledges the applicants' amendment received by USPTO on May 22, 2007. Claims 4 and 16 have been cancelled, therefore claims 1-3, 5-15 and 17-21 are currently under consideration in the application.

7. Applicant's arguments with respect to claims 1-3, 5-15 and 17-21 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jacob et al. (US 5,506,018), Prochazka (US, 3,853,566), Horner et al. (US 6,065,284), Kotxlowski et al. (US 5,023,043) and Machida et al. (US 5,866,079) are also cited in PTO-892.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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08/15/2007